

Silvopasture Establishment

**South Carolina Job Sheet
Code 381**



Definition

Silvopasture is an agroforestry application establishing a combination of trees or shrubs and compatible grasses or legumes on the same acreage to provide forage for livestock, produce wood products, increase carbon sequestration, improve water quality, improve soil quality, reduce erosion, enhance wildlife habitat, and provide shade for livestock.

Establishment

Land where silvopasture establishment applies includes: 1) pasture where trees or shrubs can be added; 2) forest where forages can be added; 3) land on which neither the desired trees nor forages exist in sufficient quantity to meet the land user's objectives.

- Where trees will be added to existing pasture, site preparation should be based on existing vegetation and soil conditions.

Refer to the SC 490-Tree/Shrub Site Preparation and SC 612- Tree/Shrub Establishment job sheets for more specific information. Trees should be planted at the recommended spacing and density shown in (Table 1).

- For existing forests being converted to silvopasture, thin and/or prune existing trees to reduce canopy cover sufficient for forage establishment and adequate growth. Generally, canopy cover of about 35 -45 percent for warm season grasses, and about 40-60 percent for cool season grasses, is recommended.

The lower end of the canopy range should be the target early in the grass establishment phase. When the canopy percent increases over time the high end of the range can be an indicator that it is time to thin again. This is a good basic recommendation but because tree and forage species vary adjustments will need to be made for optimum tree and forage production. Consult with NRCS, South Carolina Forestry Commission foresters, or private consulting foresters for further assistance.

- Refer to Forage and Biomass Planting (512) job sheet for more specific information on forage establishment.

Considerations

- Tree/shrub spacing should exceed the maximum width of equipment to be used in management.
- Use only viable, high quality, and adapted seedlings, and plant at a time and manner to insure survival and growth. Select the forage species best suited for the targeted livestock.
- Livestock grazing should be deferred until the average height of the tree's terminal bud exceeds the browsing height of the livestock and the trees are of sufficient size to resist breakage. Hay or silage can be harvested during this period.
- Place tree rows on or near the contour when water erosion is a concern, and use other supporting practices as needed for erosion control.
- Locate facilities for water, minerals, or supplemental feed to encourage uniform grazing.
- Rows should be oriented in an east-west orientation where feasible and practical to allow maximum sunlight onto grass strips.
- Wildlife should be considered when selecting tree or shrub species. Species diversity, including use of native grass species, shrubs, or forbs in the understory should be considered to meet the needs of the target wildlife species. This species diversity will also help to avoid loss of function due to species-specific pests.

Two Types of Management Systems:

When converting an existing forest stand to silvopasture, two types of systems are recommended, each with their own advantages and disadvantages

1) Even Distribution System (Selection Thinning)

The even distribution system utilizes a more intensive tree selection method when thinning the stand. Travel corridors are cut within the stand, say every fifth row or 50 feet apart and trees are thinned selectively in between, leaving the best trees with good form. This system results in a more natural appearance with trees evenly spaced across the landscape. This system will require more time and care to be used in marking the stand for thinning.

2) Alley System (Row Thinning)

The alley system utilizes row thinning with some tree selection within the remaining rows. Specific trees do not have to be marked for removal so the thinning operation proceeds rapidly once the pattern of row removal is established. This system is more advantageous to traditional farming equipment. If the landowner's emphasis is more towards forage production and less towards timber and wildlife this system should be considered.

Operation and Maintenance

- Follow Prescribed Grazing 528 and Forest Stand Improvement 666 Standards for guidelines of forage and tree management respectively.
- Prune trees when they reach a height of 15-20' tall and/or the diameter of the tree reaches 5" at a height of 6" above the ground. Remove branches where the trunk diameter is greater than 4" but do not remove more than 50% of the live canopy. Pruning operations should be scheduled periodically until the tree bole is pruned up to 18'.
- To maintain the desired percent of tree canopy, thinning at intervals of approximately every 5-7 years may be required.
- Replanting is required when plant survival is inadequate to meet practice and client objectives.
- Control competing vegetation until the trees and forage are established.
- Plant nutrient application may be needed for establishment and periodically to maintain plant vigor. Refer to Nutrient Management Standard 590 for further guidance.
- Inspect trees and forage periodically and manage any insect pests, diseases or competing vegetation.

PRACTICE CERTIFICATION

Planned by: _____ Date: _____

Approved by: _____ Date: _____

VERIFICATION

Was this practice applied according to NRCS-SC standards and specifications? Y N

Acres established: _____ Forage species and variety: _____

Tree species: _____ Trees per acre (for pasture to silvopasture): _____

Percent canopy cover (for forest to silvopasture): _____

Tree arrangement: _____

By: _____ Date: _____

Additional information

Table 1

SILVOPASTURE – TREES PER ACRE

<i>SINGLE-ROW SET</i>					<i>DOUBLE-ROW SET</i>						
<i>ALLEY</i>		tree to tree			tree to tree						
<i>WIDTH</i>		in row			in row						
		spacing			spacing		<i>ROW</i>	<i>SPACING</i>			
						6ft		8ft		10ft	12ft
15 FT		8ft	363		8ft						
		10ft	290		10ft			378		348	322
20 FT		6ft	363								
		8ft	272		8ft			388		363	340
		10ft	218		10ft	335		311		290	272
30 FT		6ft	242		6ft			382		363	345
		8ft	182		8ft	303		287		272	258
		10ft	145		10ft	242		229		218	207
40 FT		6ft	182		6ft	315		303		290	279
		8ft	136		8ft	237		227		218	209
		10ft	109		10ft	189		182		174	167

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